

DOCUMENT RESUME

ED 451 593

EA 030 936

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TITLE The Impact of Block Scheduling on Various Indicators of School Success.
PUB DATE 2000-04-00
NOTE 41p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, Louisiana, April 24-28, 2000).
PUB TYPE Information Analyses (070) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Achievement; *Attendance; *Block Scheduling; *Discipline; *Dropout Rate; *Educational Change; Elementary Secondary Education; Foreign Countries; Government Publications; Public Schools; School Safety

ABSTRACT

This project focused on the collection and analysis of longitudinal student data generated by six high schools from a large urban school system in the Midwest. Two of the schools recently converted to a 4 X 4 scheduling structure, while 3 additional schools have used a block-8 scheduling structure for a number of years. One school maintains a traditional 6-period/55-minute class structure. Graduation, dropout, attendance, and retention rates were gathered several years before and after the schools' block conversions. In addition, student achievement data based on grade point averages and failure rates were also explored for this same time period. Matching data from the traditional school site were also gathered for comparative purposes. Results indicated several positive outcomes of the conversion to block scheduling structures. (Contains 46 references.) (DFR)

THE IMPACT OF BLOCK SCHEDULING ON VARIOUS INDICATORS OF SCHOOL SUCCESS

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Paper presented at the annual meeting of the American Educational Research
Association, New Orleans, La. April 2000

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THE IMPACT OF BLOCK SCHEDULING ON VARIOUS INDICATORS OF SCHOOL SUCCESS

Abstract

This project focused on the collection and analysis of longitudinal student data generated by six high schools from a large urban school system in the Midwest. Two of the schools in this study recently converted to a 4x4 scheduling structure while three additional schools have used a block-8 scheduling structure for a number of years. One school in this district maintains a traditional 6-period - 55 minute class structure. Graduation, dropout, attendance and retention rates were gathered several years before and after the schools' block conversions. In addition, student achievement data based upon grade point averages and failure rates were also explored for this time period. Matching data from the traditional school site was also gathered for comparative purposes. The results of this study indicated several positive outcomes of the conversion to block scheduling structures. Several concerns are also noted. Implications for future research are also discussed.

Introduction

In the 1984 report, *A Nation at Risk* (1984), one of the most important concerns expressed was related to how classroom instructional time was effectively being used in America's schools. Following this report, in 1994, members of the National Education Commission on Time and Learning suggested that schools are inappropriately governed by the clock and that curriculum is often time dependent (1994, p. 7).

In the early 1980's, research findings supported the argument that educators should become more efficient in their use of current allocated time. Research findings indicated that only 60% of the school day was available for actual instruction (Rossmiller, 1983) and that 16% of each school day was lost to administrative duties and organizational distractions and interruptions (Gilman & Knoll, 1984). In addition, Boyer (1983a) and Justiz (1984) and more recently Karweit (1995) reported findings suggesting that only

38% of the average school day involve actual academic activities. These types of findings offered guarded support for educational reformists in their efforts to begin suggesting innovative possibilities for new and improved educational reform efforts and programs.

In recent years, the National Education Commission on Time and Learning (1994) recommended that the school academic day should be nearly doubled (Sommerfeld, 1994, p. 12). Within the framework of school scheduling structures, traditionally, schools have operated with six, seven, eight, or sometimes nine daily periods. Six-period schools operated classes somewhere between 50 and 60 minutes in length; seven-period schools had classes 45 to 52 minutes; eight-period schools ran sessions of 40 to 48 minutes; and the few nine period schools had classes of 42 minutes or less (Canady & Rettig, 1995a). Within each of these "traditional" scheduling structures, a variety of specific criticisms have been expressed.

Traditional Schedules

Canady and Rettig (1995b) suggested that it is doubtful that most adults could survive the impersonal hectic pace expected of students in a single-period high school schedule. To imagine adults going to work each day and having to work for seven or more supervisors, in as many workplaces, in seven or more areas of expertise seems almost incomprehensible. The typical single-period high school promotes impersonal student-teacher interactions and an unproductive, frenetic environment (Carroll, 1990). Many would also suggest that teachers who must prepare for five or six different groups of students on a daily basis have little time for personal student contact leading to the

depersonalization of the high school environment (Ballinger, 1995; Bonstingl, 1992; Canady & Rettig, 1995a; Sizer, 1990).

From a student perspective, students are ask to prepare for 6-8 classes per day; to adapt to multiple teaching styles and academic and behavioral expectations; to change desks, chairs and adapt to different lighting and heating and cooling systems multiple times each day. In addition, students are also ask to work with six, seven, or eight different groups of students per day and a range of teacher personality styles (Canady & Rettig, 1995b).

National concerns regarding discipline and violence (Fulong & Morrison, 1994; National Educational Goals Panel, 1994) also suggest that "traditional" scheduling may only serve to exacerbate a continually growing problem. Daily class transitions encourage large numbers of students to congregate in hallways, lunch rooms or commons areas with problem occurrences during these times often carrying over into the academic classroom environment. Reducing the number of transition periods nearly always has a positive effect on a school's disciplinary climate (Canady & Rettig, 1995b), but these reductions are improbable in traditional scheduling environments.

Close, personal relationships among students and teachers become less likely in traditional environments as student numbers and student-teacher ratios increase and traditional schedules are maintained. Canady and Rettig (1995b) suggested that students and teachers who have the opportunities to develop these relationships within non-traditional scheduling programs are often more respectful of each other and thus may result in the potential to quell potentially explosive behavioral situations.

Daily, short instructional periods may also contribute to a negative disciplinary climate. Canady and Rettig (1995b) again suggest that in traditional scheduling structures, limited time and pressure to cover curriculum encourages teachers to address misbehavior more severely with consequences often resulting in the student being removed from the classroom. Classroom academic time is a precious commodity and time used for disciplinary issues robs the rest of the students of instructional time. Limited instructional time makes inappropriate behavior unacceptable and behavioral problems are dealt with in a punitive fashion. Longer class periods may encourage the teacher to search for more effective behavioral management solutions in their classrooms rather than quickly passing along students to administrative disciplinarians.

Over a four-year period, traditional six-period daily schedules allow students in most cases to earn up to 48 units of credits toward their high school academic diploma. These traditional types of schedules offer little room for elective courses and in the 1980's, enrollment in performing arts and vocational courses began to drop as a result of limited elective courses that students could choose and still meet graduation requirements (Association for Supervision and Curriculum Development, 1985). In an attempt to address these issues, class periods became shorter with more course offerings, but resulted in more hectic and fragmented days for teachers and students (Canady & Rettig, 1995b). Opportunities to complete science experiments, play a volleyball game, teach electronics, or program computers become almost impossible in a time period of 40 minutes with even much of this lost to administrative duties. Carroll (1990) even suggested that "Americans typically view teenagers as hyperactive, frenetic individuals who are difficult to understand. American high schools address this hyperactivity

problem by placing teenagers in a state of perpetual motion and constantly interrupted attention."

Boyer (1983a) suggested that "the sense of the clock ticking is one of the most oppressive features of teaching" (p. 30). As teachers attempt to be creative and innovative by moving away from a straight lecture-teaching format, time constraints that traditional schedules promote make their efforts a struggle in futility. Although there is good evidence to suggest that lecture - teaching is probably not the most effective means for students to learn materials, short periods of instructional time force the lecture approach to be overused to allow exposure to a majority of the curriculum.

When innovative teaching approaches (i.e. cooperative learning) are attempted in traditional formats, many teachers recognize that this type of teaching approach is more effective, but limited time makes it impractical or impossible to implement (Hackman, 1995; Fullan & Miles, 1992; Johnson & Johnson, 1987; Kagen, 1990; Slavin, 1990). Laboratory work, active experimentation, concept development, role-playing and inquiry approaches all become problematic teaching approaches under the traditional scheduling format (Gunter, Estes & Schwab, 1990; Joyce, 1992). Opportunities to study curriculum and concepts in-depth become difficult as students study 7-8 unconnected pieces of curriculum each day. A multitude of subjects and curricular information coming at students in random order with limited opportunities for assimilation or accommodation of new material makes the traditional schedule a kaleidoscope of fragmented information (Sizer, 1990; 1992).

Canady and Rettig (1995a) suggested that perhaps the most critical (and unsolved) issue facing schools today is the fact that some students need additional time to learn

information. Providing additional opportunities for students to learn information remains difficult in a schedule that promotes a traditional school structure. With traditional scheduling where students remain in a singular class for the entire year, academic failure the first semester encourages behavior and attendance problems for the second semester when students know that the chances to pass a complete academic unit for the year are practically impossible (Canady & Hotchkiss, 1989). With traditional schedules, limited opportunities also exist to accelerate high-ability students within the current structure. Early curricular decisions in the seventh or eighth grade may allow students to take academically challenging courses later in their high school career, however school schedules that are less rigid or non-traditional may provide opportunities for students to accelerate at different and more appropriate times in their high school careers. Bottoms and his colleagues (Bottoms, Presson & Johnson, 1992) suggested that non-traditional scheduling systems provide opportunities for college prep courses, dual university enrollment, and work study environments that neither punish students for accelerating or pursuing specific interests, or punish students for needing more time to learn concepts and skills.

Historical Background

The rigidity of the traditional high school scheduling structure did not always exist in its current state. Prior to 1892 and the work of the National Education Association's Committee of Ten, early high schools and their predecessors, Latin Grammar Schools and Academies, allowed some flexibility in their school schedules (Canady & Rettig, 1995b; Gorman, 1971). These Academies and high schools prior to 1910 offered many subjects on two, three, or four-day a week schedules. With the development of the

"Carnegie Unit" in the early 20th century, the every-day period schedule became standardized. This time-driven method became a convenient, mechanical way to measure academic progress throughout the country. To this day, this bookkeeping device is the basis on which the school day and curriculum is organized (Boyer, 1983b).

Attempts to reform traditional scheduling with Flexible Modular Scheduling (FMS) (Trump, 1959) in the 60's and 70's were met with initial enthusiasm. FMS was based on the time needs of students to learn information and individual subject demands, offering flexible daily class schedules and time intervals. Based on the synthesis of over two dozen studies, Goldman (1983) reported that both teachers and students preferred flexible modular schedules to traditional ones. By the late 1980's and early 1990's, most flexible modular schedules had faded. Many attributed this to increased student discipline problems as a result of unstructured, independent student study time (Goldman, 1983), and the difficulty teachers had in tailoring their teaching practices and instructional delivery to varying lengths of classroom time.

In 1994, Cawelti (1994) provided a broad national picture of the overall high school restructuring movement and the place of the innovation known as "block scheduling" within that movement. Eleven percent of those high school principals surveyed responded that block scheduling was in general use; 12% suggested that innovative scheduling had been partially implemented; 15% had plans to implement some form of innovative scheduling for the next year.

As schools and administrators explore the possibilities of non-traditional school scheduling structures, it is important to understand that school scheduling is far more important than the simple mechanical assignment of students and teachers in rooms for

the school day. In 1994, the National Education Commission on Time and Learning summarized their findings suggesting that

Learning in America is a prisoner of time. For the past 150 years, American public schools have held time constant and let learning vary. The rule only rarely voiced is simple: learn what you can in the time that is available. It should surprise no one that some bright hard-working students do reasonably well. Everyone else - from the typical student to the dropout runs into trouble. Time is learning's warden. (National Education Commission on Time and Learning, 1994, p.7)

Research on Non-Traditional Scheduling Formats

Encouraged by a philosophy of learner-centered schools, educators are beginning to embrace structures and programs that are more effective in enabling student learning. Three central issues are prevalent in the research literature when class scheduling is considered from the elementary to the high school classroom. The first centers on the issue that schools should provide quality time for instruction and learning to occur. The second involves creating a school climate that allows quality relationships among students and staff. The third (and perhaps the most critical) is the issue of providing additional time or structure for student learning to occur (Canady & Rettig, 1995b).

Block scheduling structures may in effect provide extended time for in-depth, hands-on learning and may encourage teacher teams and clusters of students to engage in more "quality" instructional and learning activities (Fogarty, 1995). The shift to block scheduling demands dedicated, motivated teachers and administrators and requires knowledge and skill in authentic, multidimensional instructional strategies, such as cooperative learning, graphic organizers, multiple intelligence's and high order thinking, and in curricular frameworks that use subject matter in meaningful projects and performances (Fogarty, 1995).

Surprisingly void of longitudinal, quantitative effects of block scheduling, a great deal of the research to date explores these issues based upon anecdotal comments and on-site interviews with students, parents and school staff. Although a number of elementary schools across the country have adopted parallel block scheduling to reduce instructional fragmentation, improve student discipline, and provide regularly scheduled, yet flexible, opportunities for extended learning and enrichment (Canady, 1988; 1990; Canady & Reina, 1993), this review focuses on the impact that block scheduling may have on middle and high school arenas.

Canady (1989) has suggested that with block scheduling formats (particularly 4x4), both teachers and students experience less stress and instructional fragmentation. In addition, block scheduling reduces the daily number of class changes and reduces the reported number of discipline problems. Four-by-four block scheduling has also resulted in increases in daily attendance, increases in the number of honor roll students, increases in the number of students attending four-year colleges upon graduation, increases in the number of course credits students complete and decreases in student failure rates (O'Neil, 1995). O'Neil also suggested that longer class periods liberate teachers whose innovative methods don't fit traditional schedules. In buildings where block formats have been integrated, teachers have increased their use of instructional methods that promote cooperative learning and group work with an increased qualitative emphasis on high level information processing (O'Neil, 1995; Salvaterra & Adams, 1995).

Nationally, several states have begun to implement various forms of flexible scheduling formats at the secondary level. Within the last four years, 192 of North Carolina's 300 high schools have adopted 4x4 schedules without necessarily increasing

class sizes or numbers of staffing personnel (Edwards, 1993a). In the same time frame, 4x4 schools in Virginia have grown to 58 (Rettig, 1995). Both Edwards and Rettig suggest that movement to a 4x4 schedule in effect provides teachers 25% of the day with opportunities to plan innovative instructional ideas. They also suggest that students have more practical and simpler schedules and have almost twice the opportunities to master information. Students may also reserve time in their junior or senior year for career training and advanced students have increased opportunities for post-secondary study with dual enrollment opportunities at post-secondary institutions. Edwards (1995b) also suggested that students in block formats complete more courses and enroll in fewer study hall electives.

Several studies have also indicated that movement to a block schedule format may have a direct positive impact on student achievement (Canady & Rettig, 1995a; Edwards, 1995b; Nichols, 2000; O'Neil, 1995). Edwards (1995b) reported that the percent of "A" grades earned by students rose from 21 to 32 percent once block scheduling was implemented. In the first year of 4x4 scheduling, students taking advanced placement courses rose 50% and in another school system, 85% of advanced placement students earned a score of 3 or greater on placement exams, an increase of 20% from the previous year. Edwards also reported that within 4x4 structures, there was also a 3% increase in failing grades possibly due to the elimination of remedial courses.

Salvaterra and Adams (1995) and Nichols (2000) reported that overall, student grade point averages increased after block scheduling was implemented and discipline incidences along with the number of student retentions decreased. However, Salvaterra and Adams also reported that no significant increases in student ACT or SAT scores were

observed after the implementation of Block scheduling and that an actual decrease in average scores was observed in advanced placement scores when 4x4 scheduled classes were taken in the fall prior to the Advanced Placement exams which are traditionally administered in May. Salvaterra and Adams also reported that teachers implemented more computer and science lab projects after a transition from a traditional schedule to a block format.

A change to block scheduling formats has also resulted in personalizing the instructional process, allowing students and teachers to get to know each other better (O'Neil, 1995). Block formats reduce the number of students that teachers see each term and O'Neil reports fewer discipline problems and a slower, "less rushed" pace among students and faculty. His research also suggests that less of a textbook may be covered in a block-scheduled format, but classroom activities may be more varied offering a richer and more in-depth focus. Teachers and students like longer classes and students academic achievement is at the least comparable if not better than achievement in traditional scheduling structures. O'Neil (1995) also suggested that students have higher levels of cognitive engagement and more positive attitudes toward school, and teachers report that block schedules allow them to be more effective instructors. In summary, teachers who have experienced block scheduling can't conceive of returning to the "inflexible treadmill" of 55 minute classes and they think block schedules allows them to be more affective in working with students.

Potential drawbacks to block scheduling structures are varied and often may be anticipated and addressed prior to the implementation of a block format. Issues of retention of learning, loss of instructional minutes, course sequencing for foreign

language, fine arts, advanced placement and special education courses, transience rates and student transfers, class size, increased numbers of faculty and implementation costs are all legitimate concerns that should be addressed. Readers interested in how these issues may be anticipated and addressed are encouraged to refer to Canady and Rettig (1995b) for an extensive discussion of these topics. This same source also includes a lengthy discussion surrounding "hybrid" models of flex 4 x 4, block 8 and trimester scheduling systems.

The Current Project

This project focused on the collection and analysis of student data generated by six high schools from a large urban school corporation in the Midwest. For each school, student data for several indicators of student success and achievement were collected several years before and after their block implementation. The indicators of success collected for this project were student dropout rates, retention rates, attendance and graduation rates, student grade point averages above 10.0 and below 4.0 on a 12-point scale, and the number of students with 2 or more failing grades during the academic year. In addition, interviews were conducted with the administrative staff at each school to gain an understanding of the history behind their restructuring efforts, and the goals their staffed hoped to achieve by converting to block scheduling. Two of the high schools currently use a 4x4 block scheduling structure while three have been using a block 8 scheduling structure for a number of years. One high school in the district still maintains a "traditional" scheduling structure for its students. For this manuscript, the names of each school have been changed to maintain anonymity.

Elmside High School

Elmside High School is the smallest high school in the district (student population of 750) and is considered an inner-city urban site with students from low economic families and a rich diversity of cultural backgrounds. The faculty at Elmside High School originally discussed movement to a block scheduling format during the 1992-1993 school year. Reasons at that time for their interest in changing structuring schedules involved concerns for providing additional elective courses for Academic Honors diplomas, and to address student academic failure and attendance rates. After a faculty vote of 85% supporting restructuring, a flexible block 8 scheduling structure was implemented in the fall of 1994. Currently the school uses an integrated cluster arrangement for all ninth graders, which essentially takes them out of the block structure and allows them to meet on a daily basis. Beginning their sophomore year, students are fully integrated into the block 8 format. Ninth graders making below a "C" average are encouraged to enroll in a study hall and the administration suggested that this would most likely include 35% of the freshman class. In addition, at the Elmside site, concessions have been made to allow for a flex 8 schedule that allows some curricular areas (i.e. math classes) to meet on a daily basis rather than on alternating days. Although a school improvement/restructuring committee was established prior to block 8 implementation, this committee disbanded several years after the conversion.

Comments from the administration at this site suggested that declining student enrollment in recent years and the subsequent loss of faculty and staff has made block 8 more difficult to maintain. Because of these staff losses, more opportunities for required

and elective courses are badly needed. Additional comments suggest that for their school, block 8 does not appear to provide the daily student-teacher contact that students at Elmside could benefit from, especially in curricular areas like math and foreign language. Because of the low economic status of the student population, the administration suggested that students at Elmside might be less successful academically due to alternating instructional days that their block 8 structure provides.

The goals for their conversion to a block 8 scheduling format at Elmside were never clearly identified and appropriate student data before and after its implementation were not well maintained by the school site. The ability to identify the needs of students and faculty remain questionable and direct connections between student outcomes or results and the change to block 8 remain unclear. Although the administration suggested that numerous opportunities for staff development were available to help prepare teachers for the conversion to block 8, on-going professional development that focuses on effective classroom instruction and delivery techniques unique to the longer class periods that block scheduling demands, are not evident.

Northpoint High School

Northpoint High School committed to a block 8 scheduling structure beginning in the fall of 1994 with a supportive vote of 88% of the faculty. Northpoint is a large suburban, middle to upper socioeconomic class school that includes a population of approximately 1,800 students. Currently, they incorporate a ninth grade cluster similar to that at Elmside High School in that ninth graders are placed in curricular clusters and begin a complete block 8 schedule beginning in tenth grade. All freshmen and sophomores take one study hall unless they are enrolled in two music or fine arts courses.

The administration at Northpoint also suggested that they use a modified or flexible block 8 system that allows for specific courses to meet on a daily basis rather than on alternate days as typical or "straight" block 8 structures would suggest. A restructuring committee was in place as block 8 was implemented and this committee continues to meet throughout the year.

Comments from the administrative staff suggested that initial plans to implement block 8 were not clearly organized and that they have had some difficulty in maintaining enough elective courses for students to enroll in. The administration does not perceive students as having any difficulty in successfully completing 8 classes at one time on an alternating-day basis and suggested that of these 8 courses, most students can find at least a few that maintain their interest. Comments from administrators also suggested that at times, especially with inclement weather forcing school closings, it can be difficult for some students to maintain an organized academic focus when the alternate day schedule along with school closings may prevent student-teacher contact for several days at a time.

Broad goals focusing on raising academic standards, eliminating the general academic track, and improving academic programs and curriculum were identified as the conversion to block scheduling began at Northpoint. Although the administration and staff expressed confidence in their abilities to solve possible problems that block scheduling may afford, their focus appears to be more specifically upon maintenance of the present system. The administration also emphasized that block 8 scheduling at Northrop is used to provide the framework for eventually student success, not necessarily to set or mandate the curriculum. Limited student data gathered before block 8 was implemented and following its introduction at this school makes this site appear to be

somewhat limited in terms of expressing specific expectations or student outcomes that their current block 8 structure might hope to bring. There also appears to be a limited number of opportunities or choices for freshmen or sophomore elective courses. Faculty and staff appeared to have adequate opportunities for staff development training to prepare for block 8 implementation. On-going opportunities for specific alternate classroom instructional delivery that might be supportive of a block 8 format were not clearly evident although the administration reported that from September 1995 to December 1996, 80 of 86 teachers were involved in various professional development activities. The staff at Northpoint appear to have high academic expectations for its students, but these expectations and how block 8 scheduling might be used to reach these goals remain unclear.

Northriver High School

Northriver High School is an inner-city urban site with a student body that is middle to lower income including students from diverse economic and cultural backgrounds. The faculty at Northriver began discussions of restructuring and a conversion to a block scheduling format several years prior to implementation. After numerous opportunities for staff to attend workshops and visitations to other sites throughout the state that were currently using a block format, the faculty voted 82% in favor of conversion to a flexible 4x4 format and began this schedule in the fall of 1996. The administration suggested that they are currently an 80% 4x4-block school with flexibility provided to accommodate the fine arts and physical education curriculum, which meets on an alternating-day rotational basis. A restructuring committee was in

existence prior to the conversion and this committee continues to meet on a regular basis with continued discussions concerning effective scheduling and programming issues.

The administration and staff feel that the 4x4 block schedule at North Side is particularly effective for their average "low income - high transient" student population. They suggested that the 4x4 structure appears to be a system that their students can achieve success with as they only concentrate on 4 classes each semester. In their opinion, a 4-class structured schedule each semester seems manageable for students and faculty.

The goals for conversion to the 4x4 block at Northriver were initially well defined prior to their conversion and student outcomes have been well documented several years before and after their 4x4 implementation. The ability to identify the needs of the students and faculty are succinct and on going. The administration suggested that it is not clear however, that the 4x4 block is effective for all Northriver students, specifically for those students who struggle academically. Although the 4x4 schedule provides advanced classes and activities for high academic students (i.e. dual college enrollment, apprenticeship activities, increased accumulation of extra credits toward an academic honors diploma) concerns remain that the 4x4 block schedule may be most supportive or effective for a select group of students.

Nelson High School

The faculty of Nelson High School initially voted to implement 4x4 block scheduling for the fall of 1996 by a supportive vote of 75% of the faculty. The school administration suggested that the school reorganization committee had a great amount of input toward this conversion and the current school improvement committee continues to

discuss scheduling and school improvement issues. The current 4x4 schedule also provides some flexibility to specific areas of curricular concentration allowing limited classes (i.e. music and fine arts) to meet for the complete year rather than only one semester. Nelson is a large suburban high school where the student body on average is culturally diverse, and economically from middle to upper class backgrounds with many parents of these students enjoying white-collar careers in the community.

The administration at Nelson suggested that the faculty like the opportunities that 4x4 scheduling provide in that class preparation is limited to three sections or courses per day. It was also suggested that the numbers of Academic Honors Diplomas have increased and that use of the Media Center for special projects and research has increased as a direct result of the 4x4 conversion. The administration also suggested that the conversion to 4x4 has encouraged teachers to work harder to plan activities and lessons with increased variety. The administration emphasized specifically that the increased "depth" or qualitative information that students now receive as a result of longer class periods more than makes up for the total lost "quantitative" classroom time that a traditional schedule might offer.

After several years of research, analysis, and the exploration of alternative scheduling options, the Nelson staff voted to restructure and defined goals that were mutually shared with parents and students at this site. Extensive data was collected for three years before their conversion to the 4x4 block to allow for comparisons to similar data for several years after block implementation. It was suggested that Nelson along with Northriver belonged to a consortium of high schools that had on-going discussions regarding block implementation, although information generated by these discussions was not addressed.

It was also not apparent that the teaching faculty was specifically well prepared to implement the 4x4 block although several staff members prepared for the conversion by attending summer institutes and participated in visits to current block-site schools. Although on-going staff development is present, the focus is not necessarily designed to address 4x4 block scheduling issues of increased class length and improvement in instructional and curriculum delivery. The staff development opportunities that do currently exist appear to be individually or departmentally driven rather than designed toward specific opportunities to address instructional delivery or block scheduling issues. Issues of how the 4x4-block schedule addresses the needs of academically challenged students were not addressed.

Southcentral High School

Southcentral High School is an inner-city, urban school where minority students total 65% of the student population. In addition, the average economic background of their student body is the lowest in the district with a large number of students who qualify for free or reduced lunch programs. Southcentral is the only school in the district that continues to maintain a "traditional" scheduling format that allows for six classes to be taken on a daily basis throughout the school year. The school day is currently extended offering a seventh period - early morning class to allow students to attain additional credits toward graduation and an academic honors diploma. In recent years, the faculty at Southcentral has failed to gain the 75% staff support needed to convert to a block format scheduling system. The administrative staff and faculty continue to explore their options for the future as well as exploring the potential of moving toward a 3x5 trimester scheduling format.

The administration expressed concerns with both the 4x4 and block 8 scheduling systems including the impact this change could potentially have on the fine arts program at Southcentral. A school restructuring committee is currently in place and continues to discuss restructuring issues for the future.

Westward High School

Westward is a large suburban high school with a diverse student body. On average, the administration suggested that most of their students are from low to middle income backgrounds with parents typically employed in blue collar, factory or assembly line careers. Westward High School implemented a block 8 scheduling format in the fall of 1995 as 82% of the faculty voted for this conversion from a traditional scheduling system. A previous administrative staff was at the forefront of restructuring and it was decided in the spring of 1995 to make this conversion for the fall term. Faculty and staff had limited opportunities to explore other options prior to their faculty vote and limited time to ready themselves for their block conversion. They currently have a mandatory Life Skills/Career class for all incoming freshmen and expect to implement a ninth grade cluster similar to that at Elmside and Northpoint for the fall of 1999. As a result of limited numbers of elective course offerings that were available when block 8 was first initiated, some students at Westward were enrolled in as many as three study hall periods. The administration and staff recognized this situation early in the transition period, and have taken measures to ensure that students are now enrolled in at most one study hall period throughout the semester.

Administrative staff and faculty expressed their disappointment in their lack of opportunities to prepare for their initial block 8 transition. In most cases, limited staff development was available to provide support for changes in instructional delivery within extended class periods. The staff at Westward also reported that goals in the form of expected student outcomes that a block 8 format might provide were never clarified and continue to remain unclear. Comments from administrators and staff also suggested that many of the students at Westward have difficulty with organizational skills and the current block 8 format with alternating-day schedules encourages even greater student discontinuity. The staff suggested that their average student actually would benefit more from daily contact with instructors. Teachers also suggested that overall teaching strategies and instructional delivery techniques have not changed substantially with the implementation of block 8 scheduling. Administrators also suggested that recent reductions in teacher allocations for Westward High School have continued to make the block 8 format difficult to maintain with fewer elective courses made available to students.

The lack of adequate professional development opportunities for administrators and staff made the implementation of a block 8 schedule at Westward problematic at best. Although a restructuring committee was in existence before the schedule change was implemented, previous administrative personnel were at the forefront of the block 8 conversion and provided limited support to staff in their attempts at implementation. Although some strong academic students remain successful at this site, low academic achievement for many students at Westward suggest limited academic gains from their block 8 conversion. Clarification of potential student outcomes and anticipated goals

may be a first step for the staff at Westward in their continued search to determine the type of scheduling structure that will provide the greatest benefits to students at this site.

Results

Tables 1-6 provide descriptive student data at each high school site for the years 1993-1994 to 1997-1998. The data that was collected includes student percentages of graduation, dropouts, daily attendance, retention, grade point averages greater than 10.0 and less than 4.0 on a 12-point scale, and those students earning two or more failing grades in a single year.

The average student attendance at Elmside High School has remained stable for the last six years with a variance of less than 2% over this time span. Student graduation rates have continued to fluctuate throughout the past several years with slight decreases in the year following their block 8 conversion. At 1.3% and 2.9 % respectively in 1997-98, Elmside's dropout and retention rates were some of the lowest in the district with this trend beginning after their block implementation. Grade point averages for students at Elmside have remained relatively stable for a number of years with only moderate changes seen after block scheduling was implemented. Although the number of student grade point averages above 10.0 and below 4.0 at this site have remained stable over a number of years, the percentage of students earning two or more failing grades has increased significantly in the last five years with the most recent year at 40.2% representing the highest rate in the district.

At Northpoint High School, average student attendance rates have remained stable over the past several years with dropout and retention rates steadily decreasing

after their conversion to block 8 in the fall of 1994. Students at Northpoint have also experienced slight increases in graduation rates in the past year after a moderate decline upon their conversion to a block format. The number of students earning grade point averages above 10.0 and below 4.0 have remained consistent over the years, however like Elmside, the number of students earning two or more failing grades has steadily increased with gains of more than 10% of the student body after their block 8 conversion.

The student data at Northriver High School follows a similar trend of that seen at Elmside and Northpoint in that attendance rates have remained stable over a number of years with significant increases observed in student graduation rates and decreases in dropout and retention rates after their 4x4 block conversion. These trends however appeared to be in process before the decision was made to convert to a block format in that several years prior to their block transition in 1996, positive gains could already be observed. This perhaps is indicative of several other programs that were in the process of being initiated at Northriver to support student success. The number of students with grade point averages indicating academic success and failure also follow a similar pattern as those seen at previous block format schools that have been discussed. Despite the stability in these numbers over the past five years, the number of students failing 2 or more classes has continued to rise with the greatest increase seen after their conversion to a block scheduling structure.

Although Nelson High School implemented a 4x4 block structure in 1996, very few changes can be seen in the student data in regards to graduation, dropout, attendance, and retention rates. The graduation rate at Nelson continues to be one of the lowest in the district while at the same time, their student retention rate percentage is the lowest in the

district. The number of student grade point averages above 10.0 and below 4.0 have remained stable over the years and parallel those of other students at other block sites. Nelson has had the highest percentage of students above a 10.0 grade average in the district for the past 5 years and continues to maintain this advantage. Despite the appearance of a high achieving student body, the number of students receiving two or more failing grades has also increased slightly after their conversion to their 4x4 block format.

Southcentral High School is the only school in the district that continues to maintain a "traditional" schedule of 6 classes on a daily basis throughout the year. Recently in the fall of 1998, they have also provided an early morning and late afternoon class offering for students desiring to earn an extra 1-2 credits toward graduation. The student data from Southcentral is offered in this report simply for comparative purposes in an effort to show trends in the student data at one site where a traditional scheduling format has been maintained for a number of years. At Southcentral High School, graduation rates have been the lowest in the district for the past 4 years coupled with the highest rates of student dropout and retention rates. The number of students experiencing failing grades each year also continues to be high at Southcentral.

Student attendance rates at Westward High School have remained consistent for the last six years despite their conversion to a block 8 structure in the fall of 1995. It is important to also note that after a 15% decrease in graduation rates at Westward after their block conversion, graduation rates have steadily increased to a level beyond the year prior to the conversion. Slight increases in the number of students with grade point averages below 4.0 can also be seen in the data over a number of years. The number of

students with 2 or more failing grades has increased significantly (17%) in the last 6 years with the largest increase of over 10% during the year of their block 8 conversion.

Discussion

Within educational settings, schools are distinctly unique in the students and communities they serve. In addition, the administration, teachers and supplemental programs that are provided for students are typically in a continual state of evolution and flux, making it difficult to determine specific variables that support student academic achievement and success. As schools continue to pursue restructuring and reform efforts, block scheduling may be one tool within a host of innovative structural or curriculum changes that serve to support student success.

This project is unique in that although various researchers throughout the country laud the merits of block scheduling structures (Canady, 1992; Canady & Rettig, 1995a; Canady & Rettig, 1995b; Dempster, 1993; Edwards, 1993b; Queen & Isenhour, 1998) in support of increasing opportunities for student success, actual quantitative data is seldom offered to support these anecdotal comments or theoretical positions. This project offers quantitative data over a number of years for six distinct school sites, two 4x4, three block 8, and one traditional schedule site, all within one large urban school district. Understanding the uniqueness of each site and its constituents, it becomes inappropriate to compare student data between sites, but rather, comparisons of within school site data can be explored to determine if effective reform has actually occurred within each school before and after the scheduling conversions have taken place.

Along with the need for "within school" data comparisons, it becomes important to establish a clear definition of the components that should be in place at any school site

where block scheduling reform is being considered. The component configuration offered in Figure 1 is one example of a possible structure that could be used to assist schools in their planning and preparation for major scheduling reform. Figure 1 includes eight components that are supported by the research literature and considered necessary for effective block implementation along with a 5-tiered variation of the effective level of component implementation. Schools that are able to have each of these components in place at the fourth or fifth level focused toward the left side of Figure 1, will continue to have the greatest success with block implementation. School sites with the majority of components toward the right side of Figure 1 at the first or second level will undoubtedly struggle with their attempts to implement effective scheduling reform. For this project, staff and administrative comments from Elmside and Westward High Schools indicated that they experienced limited success with their hurried and poorly planned efforts to implement block scheduling reform and had each of the eight block components listed in Figure 1 located at variation levels 1-3. In contrast, comments from Nelson and Northriver school site staff suggested they had greater success with their implementation, as a result of the majority of the scheduling components in place at or beyond variation level four before their block implementation. Figure 1 offers but one example that schools may use to assist their staff with scheduling reform efforts by providing a clear structure necessary for effective implementation. At the same time, it may also provide indicators of poor planning or areas where some components necessary for effective reform remain inadequate.

The data that appears in this report along with comments from site administrators begins to suggest that in schools where clear student goals have been developed and staff

development opportunities to address the block format have been promoted within the school (two vital components listed in Figure 1), a potential successful transition to a block format can be observed. In addition, time to plan and prepare for this transition is a key element for a successful change or reform to occur. General conclusions that may be drawn are the fact that in schools where appropriate time had been given and focused planning has occurred (in this researcher's opinion at Northpoint, Northriver and Nelson) increases in graduation rates and decreases in dropout and retention rates are clearly evident. In schools where block scheduling was poorly planned for and quickly implemented (Westward and Elmside), students continue to struggle and in some cases, these changes actually can be observed to have a negative impact initially on student achievement and school success.

Despite the fact that a block scheduling format appears to offer several advantages to its students, the data from this report suggests that educators should remain concerned about the increases in the number of students who remain academically unsuccessful, despite their block conversion. In each block format school, significant gains can be seen in the number of students failing more than two classes in a single year and at several sites, increases in the number of students with grade point averages below 4.0 (or at or below a C- average) should be a concern of administrators and faculties at these sites. Although high achieving students remain successful regardless of the scheduling format that a school happens to offer, some scheduling structures may not provide the support that low achieving students may need to become more successful. In fact, some scheduling structures may actually be seen as harmful, particularly, for students who are already struggling academically. The results of this report do not allow one to suggest

that block 8 is better than 4x4 or that 4x4 is better than block 8, or that block scheduling is a more effective structure than a traditional scheduling format. What the data does suggest is that proponents of educational reform and change should remain aware of the potential hazard of large-scale reform efforts without the proper planning and preparation that is needed to implement such changes. This project is by no means exhaustive in the conclusions that can be drawn from the data. In fact, several limitations of this study should initiate additional research on high school scheduling structures.

Specific limitations of this study are first; specific issues of the number of minutes of student-teacher contact at any school site were not explored. Although within a block scheduling structure, the total amount of student-teacher contact in terms of quantitative minutes actually decreases, most teachers and administrators at block sites suggested that the quality of student-teacher interaction more than made up for the loss of quantitative time. Although this may be true, documentation of "quality time" is not offered in this report.

Second, and linked to the limitation cited above, this project did not look at specific instructional delivery changes that may have taken place with the implementation of block scheduling. With longer blocks of classroom time (90 minutes in most cases) in a block structured day, specific changes that teachers have made in their instruction and interaction with students as a direct result of their block conversion should be documented and addressed in future studies.

Third, student grade point averages at each site are explored as a whole, without specific notation to increases or decreases in academic achievement in specific core content areas. At block sites, students enroll in eight courses throughout the year,

increasing not only their chances for diversity of study, but also increasing their chances for academic failure. Specific exploration of the impact of block scheduling on core academic subject areas should be an additional area of exploration in the future.

Fourth, this project did not address the specific impact that block scheduling may have on music, fine arts, vocational and athletic team participation. There exists in the research literature suggestions that at some sites around the country, when block scheduling has been implemented, enrollment in music and fine arts programs has been severely damaged by less student participation. However, anecdotal comments from several staff members at these block sites suggest that flex-schedules have been implemented to allow for student participation in these courses, and in fact, student participation in music and fine arts courses in the district has actually increased in recent years. Further documentation of student participation in these types of courses is needed in the future to ensure that block scheduling does not become a piranha to curricular areas that are not considered core academic subjects.

Fifth, administrative and teacher staff turnover rates are not explored in this report, therefore, there is no succinct measure available to determine how well existing teachers were prepared to implement block scheduling, or how well new administrators or teachers were adequately prepared to enter a building site where block scheduling was new for them. In buildings with high turnover rates, the impact of the ability of "rookie" block teachers or administrators to implement and deliver their instruction within this unfamiliar format may be an issue that should be explored.

Sixth, data exploring the impact of block scheduling structures focusing on student gender, culture, and economic background were collected but not presented in this report. However, these issues will be explored extensively in the near future.

Conclusion

In summary, block scheduling can be an effective tool to allow students additional opportunities for course selection and successful achievement. At the same time it may also allow teachers and staff unique experiences to provide extended creative instructional delivery and learning opportunities for their students. When adequate planning and preparation take place along with the clarification and documentation of student outcome goals, schools can experience successful transitions to a block scheduling format. When this planning and preparation does not occur and student outcome goals remain unclear, block scheduling transitions will continue to be difficult and seldom in the best interest of the school's staff and students. Proper planning along with documentation of school effectiveness and student success continue to be the key ingredients for successful implementation of block scheduling structures and school reform initiatives. The time has come to no longer hold "learning in America" hostage as a "prisoner of time". But with learning's emancipation comes the responsibility of educators to appropriately prepare for change and reform by effectively setting the stage to revolutionize the instructional environment.

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Table 1

Percentages of Students for Elmside High School Before and After Block 8 Implementation

	Graduating	Dropout	Attendance	Retention	GPA >10.0	GPA < 4.0	2 or more F's
1993-94	93.4	8.5	91.1	4.8	4.3	30.2	30.2
1994-95*	90.3	2.7	91.0	6.2	5.5	25.0	31.8
1995-96*	88.6	3.1	92.8	4.1	4.8	31.1	36.0
1996-97*	84.8	5.1	91.4	3.2	4.9	29.6	36.7
1997-98*	95.7	1.3	92.3	2.9	5.1	29.3	40.2

Note: * indicates years after block implementation. GPA is on a 12-point scale.

Table 2
Percentages for Students at Northpoint High School Before and After Block 8 Implementation

	Graduating	Dropout	Attendance	Retention	GPA >10.0	GPA < 4.0	2 or more F's
1993-94	84.4	7.3	93.9	1.6	11.3	16.8	11.5
1994-95*	89.0	4.2	93.5	7.0	12.1	16.9	15.4
1995-96*	92.4	3.0	93.3	10.7	11.5	18.5	23.3
1996-97*	90.5	2.6	93.0	15.1	12.5	17.9	22.8
1997-98*	92.2	1.3	93.0	9.7	12.6	18.6	23.2

Note: * indicates years after block implementation. GPA is on a 12-point scale.

Table 3
Percentages for Students at Northriver High School Before and After Block 4x4 Implementation

	Graduating	Dropout	Attendance	Retention	GPA >10.0	GPA < 4.0	2 or more F's
1993-94	74.3	7.3	93.9	4.8	11.3	16.8	23.5
1994-95	84.4	4.2	93.5	6.2	12.1	16.9	29.5
1995-96	89.0	3.0	93.3	4.1	11.5	18.5	31.1
1996-97*	90.5	2.6	93.0	3.2	12.5	17.9	35.3
1997-98*	92.2	1.3	93.0	2.9	12.6	18.6	34.6

Note: * indicates years after block implementation. GPA is on a 12-point scale.

Table 4
Percentages for Students at Nelson High School Before and After Block 4x4 Implementation

	Graduating	Dropout	Attendance	Retention	GPA >10.0	GPA < 4.0	2 or more F's
1993-94	86.4	3.8	94.9	5.1	5.8	17.5	11.2
1994-95	88.0	3.8	94.9	4.0	12.3	18.1	16.2
1995-96	85.8	3.7	95.1	4.9	12.8	20.6	17.5
1996-97*	86.8	3.3	94.5	4.4	15.0	17.4	23.5
1997-98*	89.8	1.6	95.1	2.3	18.2	15.1	20.6

Note: * indicates years after block implementation. GPA is on a 12-point scale.

Table 5
Percentages for Students at Southcentral High School on a "Traditional" Schedule

	Graduating	Dropout	Attendance	Retention	GPA >10.0	GPA < 4.0	2 or more F's
1993-94	81.5	5.4	89.1	9.6	5.8	35.1	33.3
1994-95	73.7	7.4	89.4	12.0	7.5	27.1	31.8
1995-96	70.8	8.5	91.9	12.2	6.3	27.4	35.7
1996-97	85.5	4.1	90.2	13.9	6.5	27.1	30.8
1997-98	86.3	3.5	90.9	12.8	7.8	27.0	29.8

Note: Southcentral is the only high school in the system that is not on a block scheduling format. GPA is on a 12-point scale.

Table 6
Percentages for Students at Westward High School Before and After Block 8 Implementation

	Graduating	Dropout	Attendance	Retention	GPA >10.0	GPA < 4.0	2 or more F's
1993-94	80.1	3.7	91.0	9.2	5.1	31.0	20.6
1994-95	90.7	5.3	91.2	**	5.2	32.9	25.4
1995-96*	75.4	2.4	91.5	**	5.8	35.1	36.1
1996-97*	85.9	4.1	89.5	14.0	5.4	32.7	38.2
1997-98*	92.2	1.2	89.1	12.0	5.9	35.4	37.0

Note: * indicates years after block implementation. ** indicates no retention data were available for that specific year. GPA is on a 12-point scale.